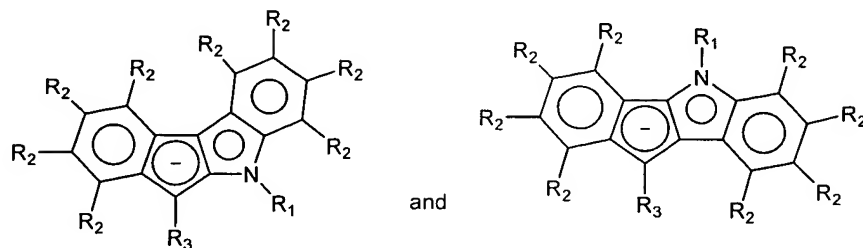


We claim:

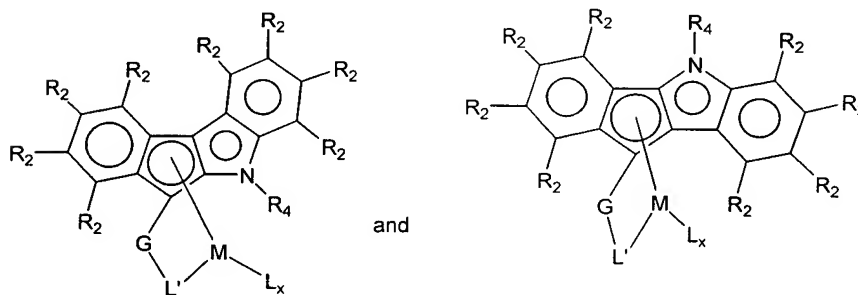
1. A process which comprises polymerizing an olefin in the presence of an activator, an organometallic complex, and an aluminum phosphate support, wherein the complex comprises a Group 3 to 10 transition metal, M, and at least one indenolindolyl ligand that is bonded to M.
2. The process of claim 1 wherein the Group 3 to 10 transition metal is a Group 4 transition metal.
3. The process of claim 1 wherein the activator is selected from the group consisting of alumoxanes, alkylaluminum compounds, organoboranes, ionic borates, ionic aluminates, aluminoboronates and mixtures thereof.
4. The process of claim 1 wherein the olefin is selected from the group consisting of ethylene, propylene, 1-butene, 1-pentene, 1-hexene and 1-octene and mixtures thereof.
5. The process of claim 4 wherein the olefin is ethylene in combination with a second olefin selected from the group consisting of 1-butene, 1-hexene and 1-octene.
6. The process of claim 1 wherein the aluminum phosphate has a phosphorus to aluminum molar ratio of about 0.8:1 to about 1.1:1.
7. The process of claim 1 wherein the aluminum phosphate has a surface area of from about 50 to about 250 m²/gram.
8. The process of claim 1 wherein the polymerization is performed at a temperature within the range of about 20°C to about 100°C.
9. A slurry polymerization process of claim 1.
10. A gas-phase polymerization process of claim 1.

11. The process of claim 1 wherein the indenoindolyl ligand has a structure selected from the group consisting of:



in which R_1 is selected from the group consisting of C_1 - C_{30} hydrocarbyl, dialkylboryl, trialkylsilyl and divalent radicals connected to a second ligand; each R_2 is independently selected from the group consisting of C_1 - C_{30} hydrocarbyl, H, F, Cl and Br; R_3 is selected from the group consisting of C_1 - C_{30} hydrocarbyl, H, and divalent radicals connected to a second ligand wherein one of R_1 or R_3 is a divalent radical selected from the group consisting of hydrocarbyl and heteroatom containing alkylene radicals, diorganosilyl radicals, diorganogermanium radicals and diorganotin radicals.

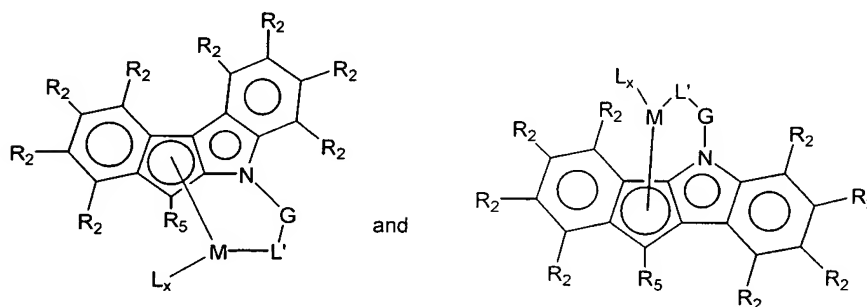
12. The process of claim 1 wherein the organometallic complex has a structure selected from the group consisting of:



wherein M is a Group 3 to 10 transition metal; each L is independently selected from the group consisting of halide, alkoxy, aryloxy, siloxy, alkylamino, and C_1 - C_{30} hydrocarbyl; L' is selected from the group consisting of alkylamido, substituted or unsubstituted cyclopentadienyl, fluorenyl, indenyl, boraaryl, pyrrolyl, azaboroliny and indenoindolyl; x satisfies the valence of M; R_4 is

selected from the group consisting of C_1 - C_{30} hydrocarbyl, dialkylboryl and trialkylsilyl; each R_2 is independently selected from the group consisting of C_1 - C_{30} hydrocarbyl, H, F, Cl and Br; G is a divalent radical selected from the group consisting of hydrocarbyl and heteroatom containing alkylene radicals, diorganosilyl radicals, diorganogermanium radicals and diorganotin radicals.

13. The process of claim 12 wherein L' is selected from the group consisting of substituted or unsubstituted cyclopentadienyl, fluorenyl, indenyl, and indenoindolyl.
14. The process of claim 1 wherein the organometallic complex has a structure selected from the group consisting of:



wherein M is a Group 3 to 10 transition metal; each L is independently selected from the group consisting of halide, alkoxy, aryloxy, siloxy, alkylamino, and C_1 - C_{30} hydrocarbyl; L' is selected from the group consisting of alkylamido, substituted or unsubstituted cyclopentadienyl, fluorenyl, indenyl, boraaryl, pyrrolyl, azaboroliny and indenoindolyl; x satisfies the valence of M ; R_5 is selected from the group consisting of C_1 - C_{30} hydrocarbyl and H; each R_2 is independently selected from the group consisting of C_1 - C_{30} hydrocarbyl, H, F, Cl and Br; G is a divalent radical selected from the group consisting of hydrocarbyl and heteroatom containing alkylene radicals, diorganosilyl radicals, diorganogermanium radicals and diorganotin radicals.

15. The process of claim 14 wherein L' is selected from the group consisting of substituted or unsubstituted cyclopentadienyl, fluorenyl, indenyl, and indenoindolyl.
16. The process of claim 1 wherein the activator is directly added to the polymerization reactor.
17. The process of claim 1 wherein the organometallic complex and some or all of the activator are premixed and then combined with the aluminum phosphate.
18. The process of claim 1 wherein the aluminum phosphate and some or all of the activator are premixed and then combined with the organometallic complex.